

The path length from the array to the source shortens by $D \sin \theta$ as shown for movement Left to Right along the array. Received phase advances accordingly.

The DFT will have as many input ports as there are elements

Discrete Fourier Transform (DFT)

Zero Pad

1 2 3 4 5 6 7 8

Source at Infinity

The path length from the array to the source shortens by $D \sin \theta$ as shown for movement Left to Right along the array. Received phase advances accordingly.

4 → The DFT will have as many input ports as there are elements

Discrete Fourier Transform (DFT)

The number of output bins (Angles of Arrival) is selected on the basis of the required angle discrimination. Such discrimination and the sidelobe structure will be determined solely by the number and distribution of the input ports.

FIGURE 1

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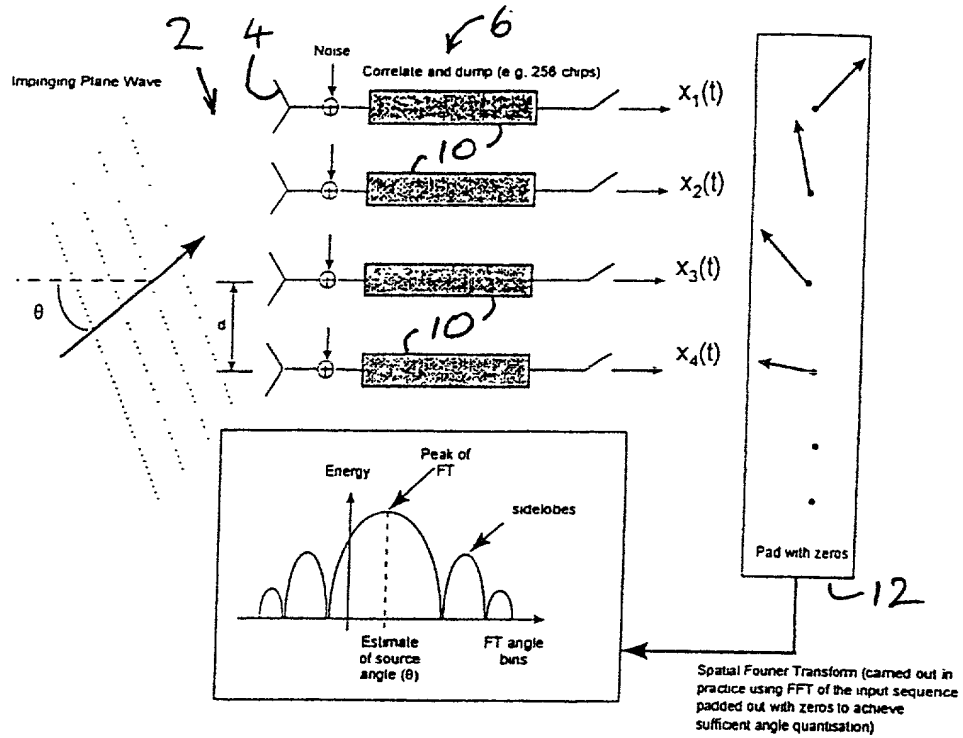


FIGURE 2

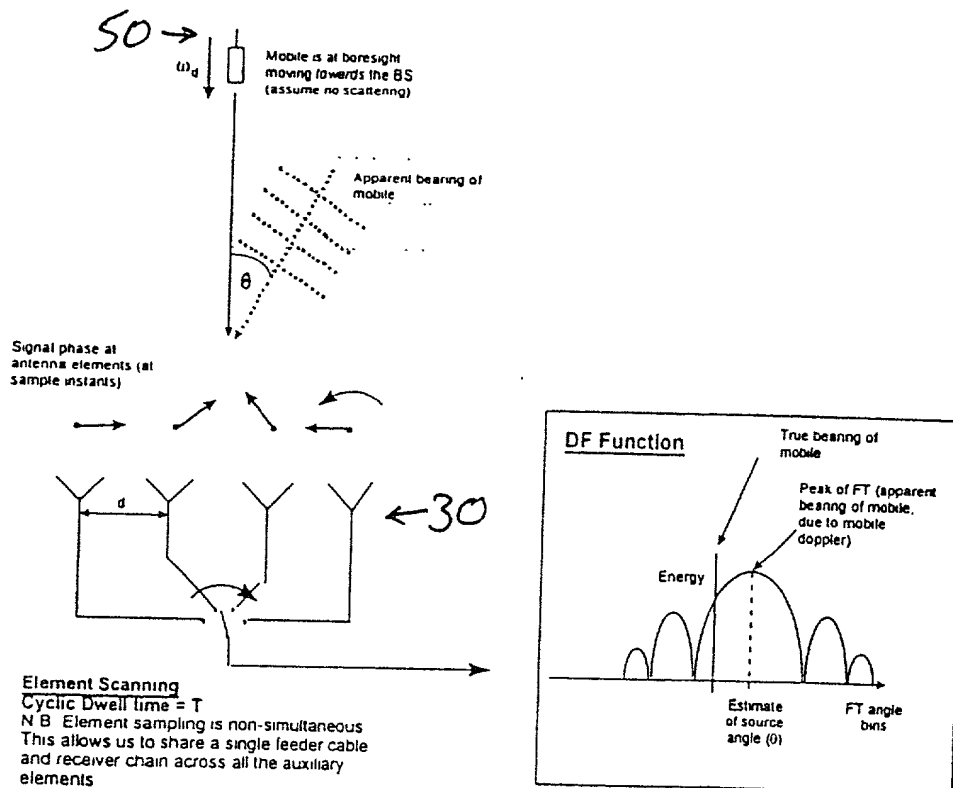


FIGURE 4

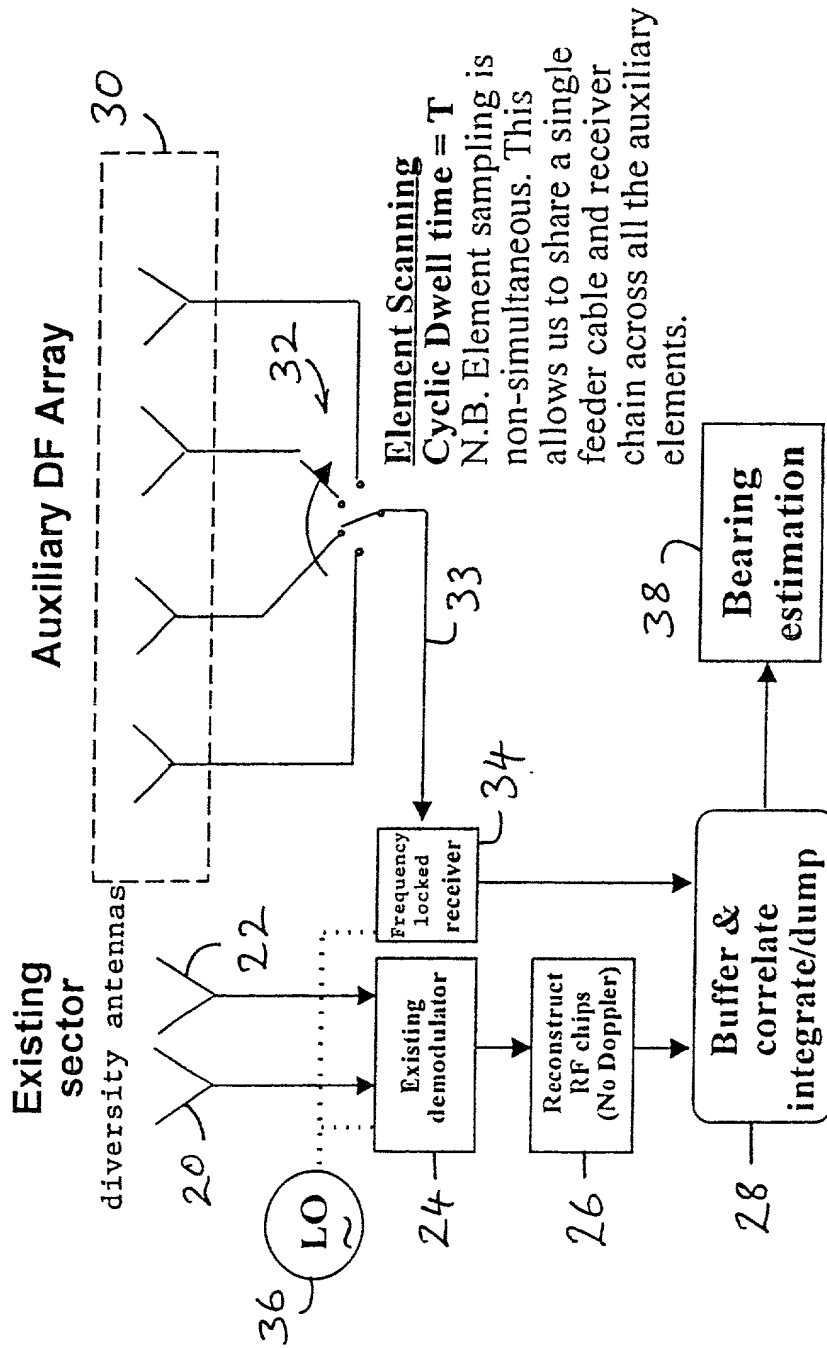


FIGURE 3

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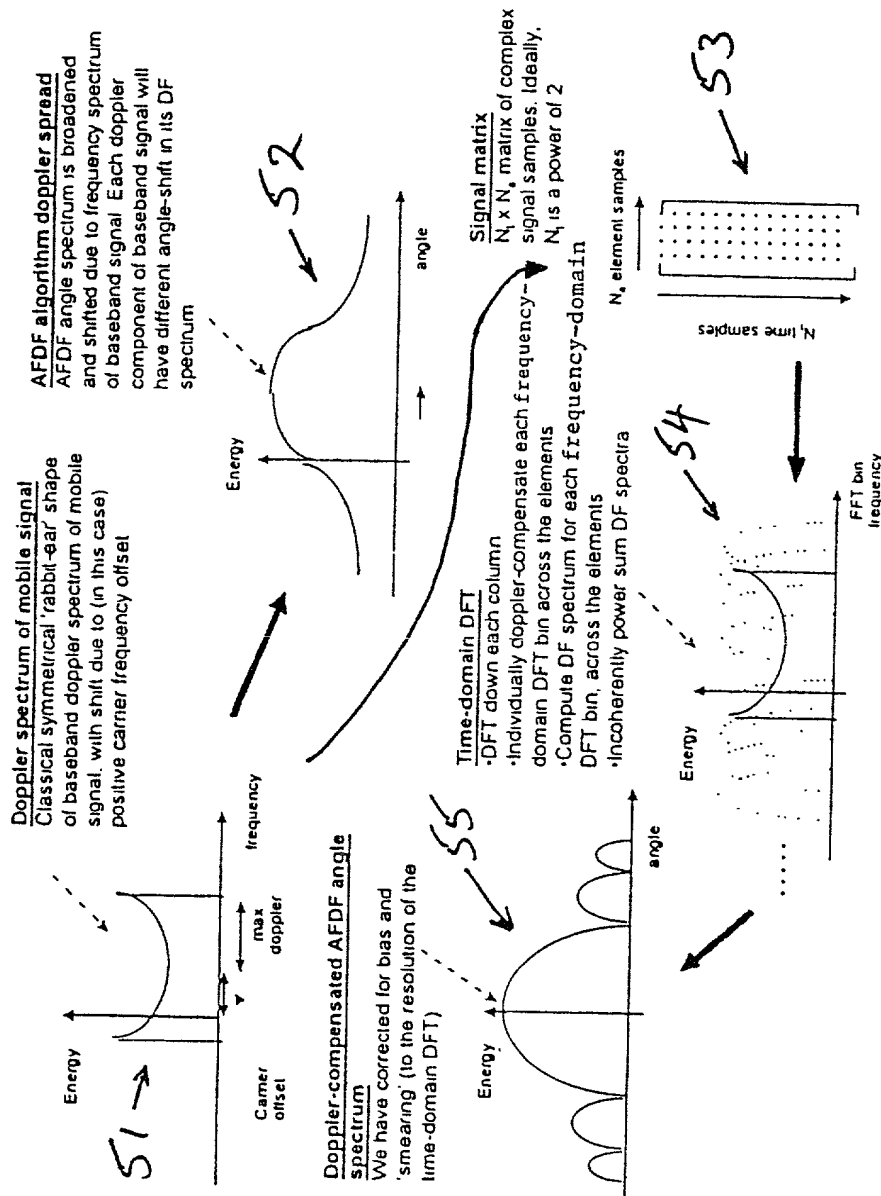


FIGURE 5

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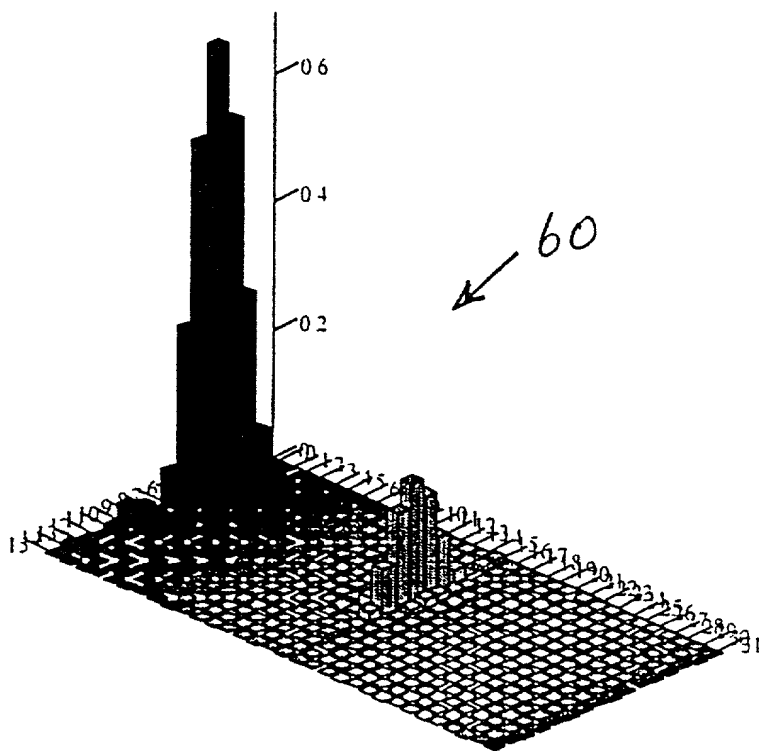
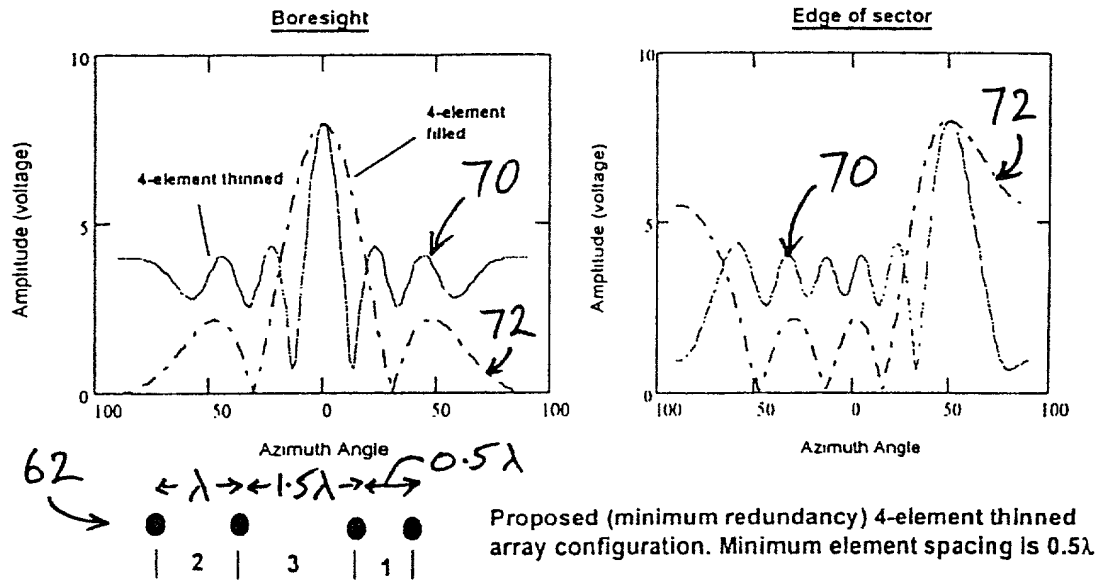


FIGURE 6

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- The selected thinned array configuration biases elements towards the edge of the available aperture and achieves a -3dB beam width of 11° (N.B. Narrower beamwidth than a 7-element filled array due to the 'end-weighting').
- Peak sidelobes close to the -6dB target level are achieved even when the main beam is scanned towards the edge of the sector.

FIGURE 7

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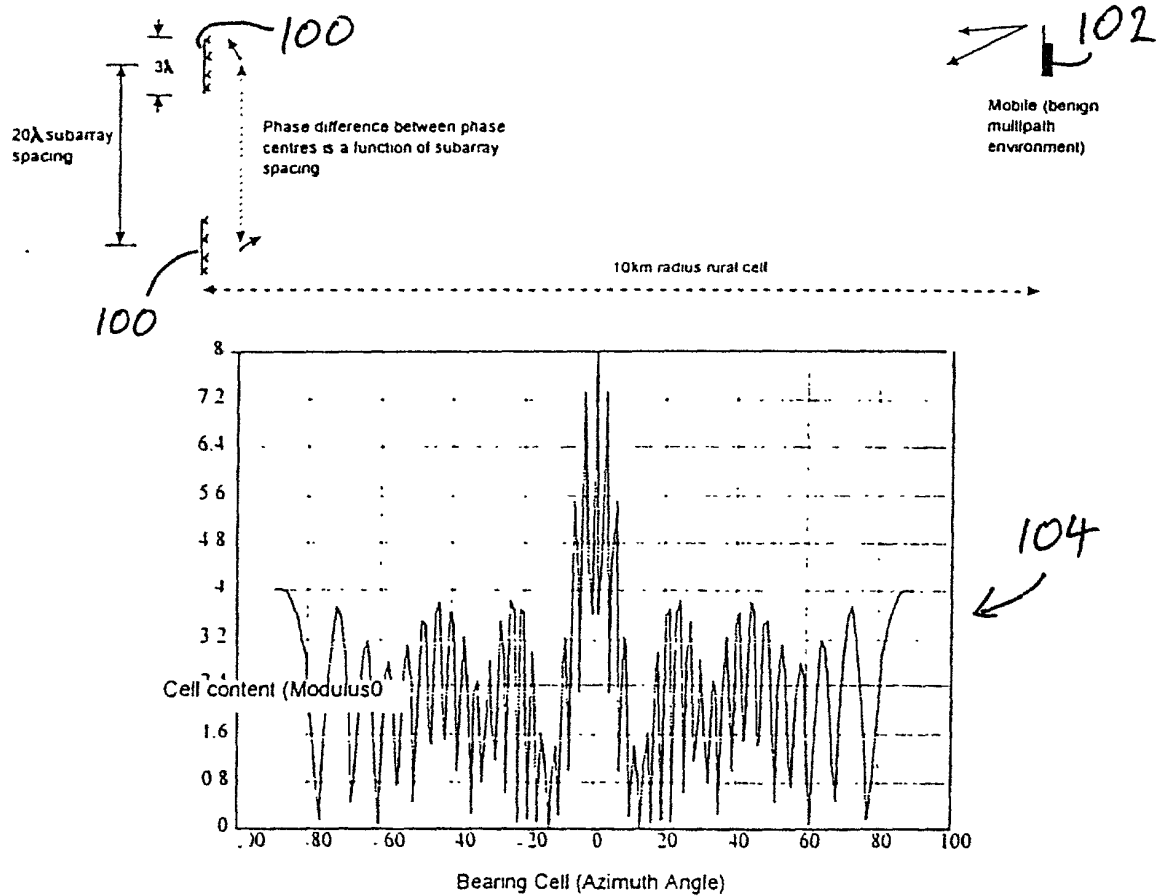
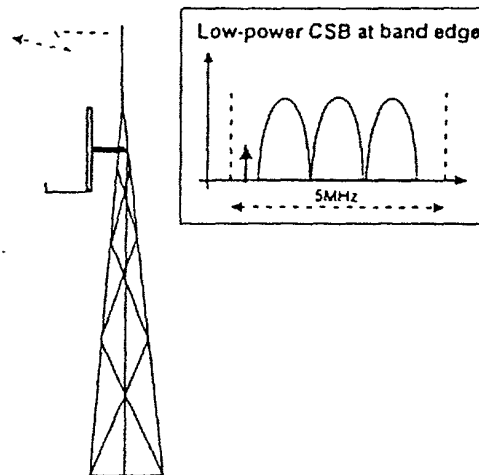
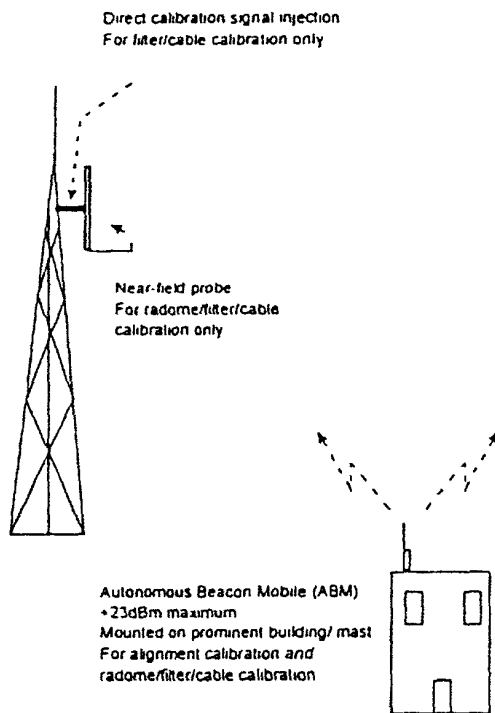


FIGURE 8

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Cellsite Beacon (CSB)
-12dBm maximum
For alignment calibration only



Calibration Strategy
•Calibrate alignment of every DF antenna array
overnight using CSB or ABM
•Calibrate on-frequency phase errors due to
radome/filters/cables using near-field probe,
direct injection or ABM during or just after E911
emergency call

FIGURE 9

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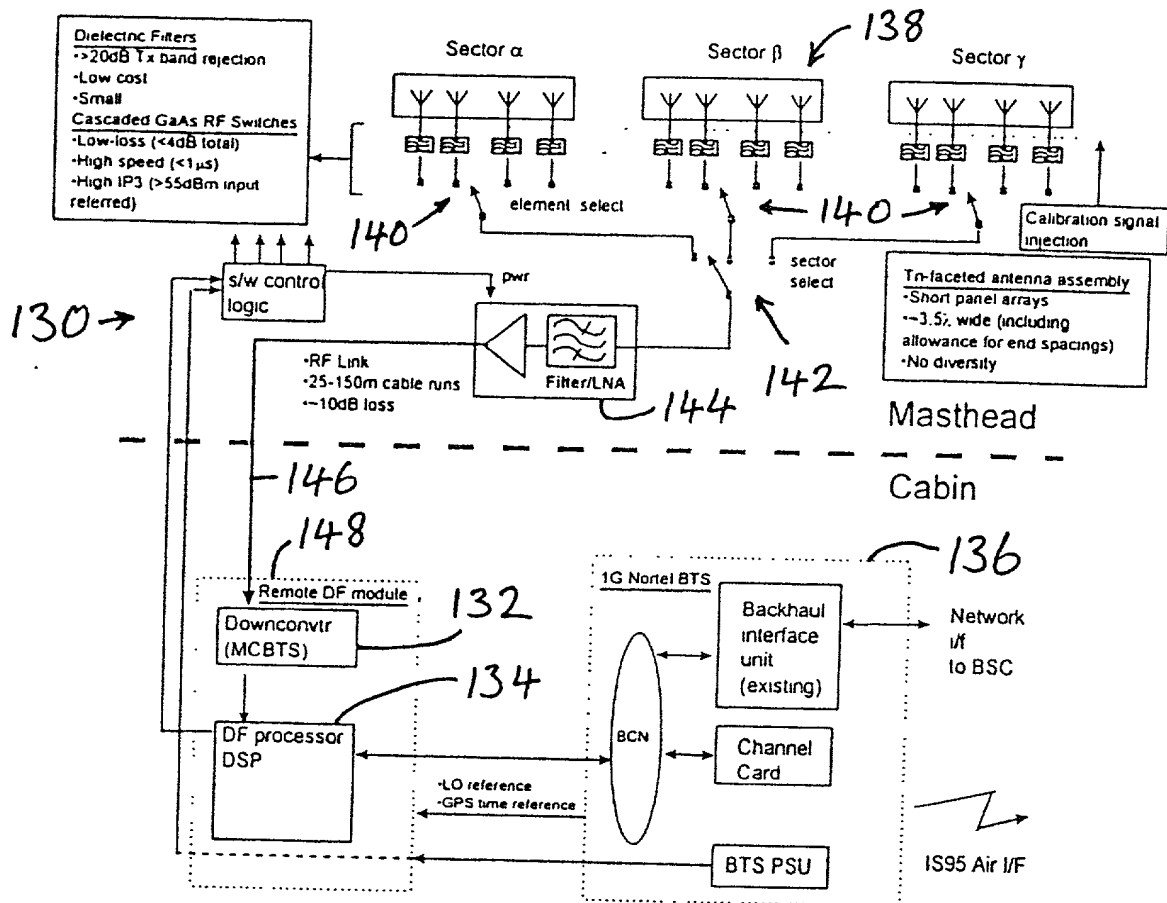


FIGURE 10

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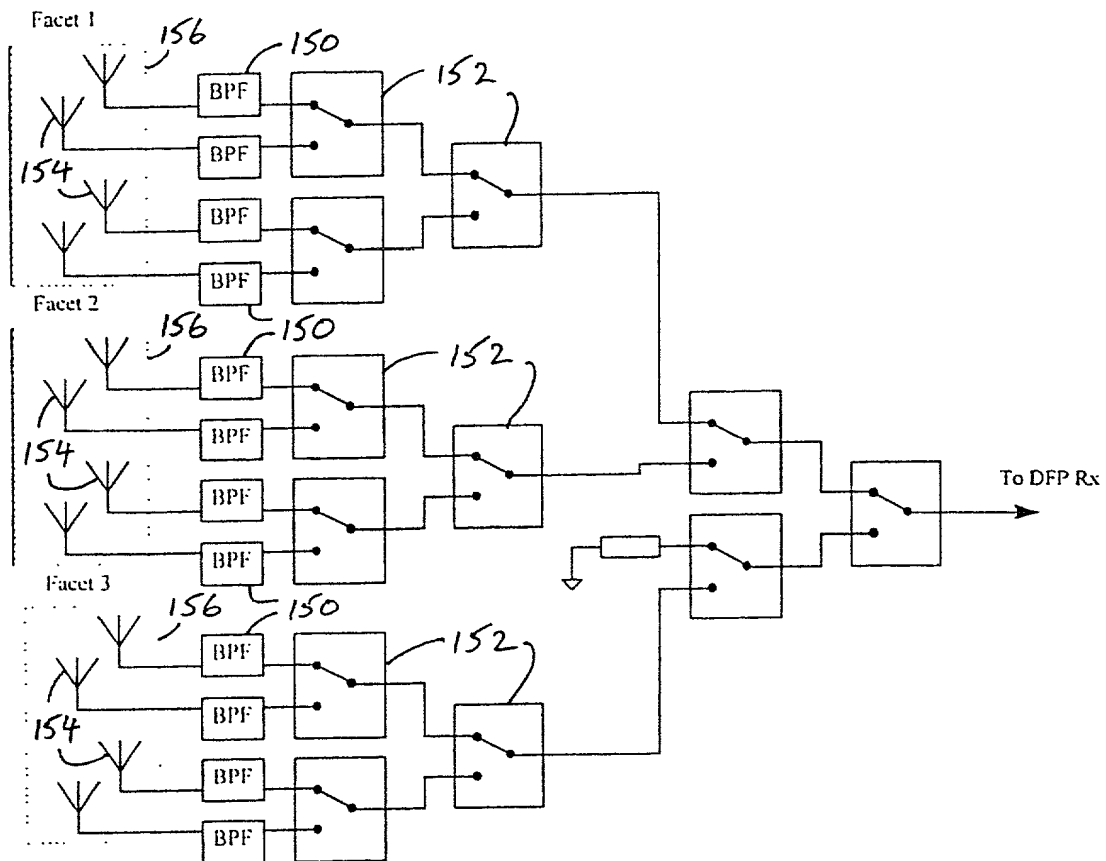


FIGURE 11